

labour should have been expended upon a material so little capable of doing it justice, when the employment of silvered glass would have given entire permanency to the beautiful curves which Herschel knew how to bestow. But that invention was reserved for Foucault at a later day. Had Sir W. Herschel known of it, the 4-foot mirror would not only have been of far easier workmanship, but would still be ready for a comparison of its merits, as to which there has been much discussion, with the productions of modern days. This, however, is rather matter of curiosity than of real use. It is no detraction from Herschel's well-deserved reputation to suppose that the four MS. volumes which he left behind, containing all the details of his experiments and processes, would be found to add little to the knowledge now possessed by our most successful reflector makers. As to metal-working, difficulties equal, and greater, have been encountered and vanquished by Lassell and the Earl of Rosse: as to silvered glass, Steinheil indeed has abandoned the undertaking, and of the quality of the great French reflectors we know little on this side of the Channel; but the near approach to perfection in the hands of English artificers, and especially of With (who, we are glad to hear, is contemplating an increase in his apertures), leaves no room for regret on that score. Never, probably, were reflecting telescopes more faultless than now; never could they challenge so fearlessly a comparison with the great achromatics of the day. May astronomers be found who shall be capable of working them to their fullest capacity and for their noblest end. But whatever future advances may be in store for us, whether in the optician's or the observer's hands, nothing in either respect will ever detract from the honour of Sir William Herschel, or of her whose memoirs we have now been perusing with so much interest. Her brother's place indeed might more easily be supplied: one equal to herself, as the most efficient, unwearied, self-denying, devoted of assistants we can scarcely expect to see again.

T. W. WEBB

MORESBY'S "NEW GUINEA AND POLYNESIA"

Discoveries and Surveys in New Guinea and the D'Entrecasteaux Islands. A Cruise in Polynesia and Visits to the Pearl-shelling Stations in Torres Straits by H.M.S. Basilisk. By Capt. John Moresby, R.N. With Maps and Illustrations. (London: John Murray, 1876.)

NEW Guinea has been much before the public recently. As our readers know it has been the field of a number of small exploring expeditions, the somewhat fragmentary results of which have only served to whet our appetite for more information. Most of these expeditions, under such men as Meyer, Beccari, D'Albertis, and Miklukho Maclay, have been occupied with the western part of the island, our knowledge of the eastern and larger half having been practically almost a blank. Capt. Lawson's wonderful work (NATURE, vol. xii. p. 83) with its abundance of astounding statements can scarcely be regarded as a contribution to our knowledge of the island, though it has made us still more anxious to know the truth about a land which, even in the present advanced state of geographical knowledge, seems to have

unknown wonders to reveal. Quite recently we heard of the discovery of a large river debouching on the south coast, and of a gigantic bird, and the signs of an equally gigantic quadruped having been seen. Only last week we were able to give some news of the indefatigable D'Albertis. Then the Australian colonists are casting longing eyes on the fertile island, and a proposed colonising expedition recently made a considerable stir in this country. All these circumstances have made us anxious to obtain trustworthy information concerning a country of three times the area of England, Wales, and Scotland combined.

Capt. Moresby's work is one of the most important contributions which have been made to our knowledge of the geography of New Guinea. It records in a simple and direct manner the results of four years of thoroughly painstaking and careful work, and, as far as it goes, may be relied on as perfectly trustworthy and accurate. Capt. Moresby does not pretend to give any information as to the natural history of the islands visited, his attention having been directed to their geographical and physical features, their industrial products, and the characteristics of the natives. On all these points valuable and substantial information will be found in the extremely interesting work before us. The time during which the *Basilisk* was at work in Polynesia and New Guinea was between the beginning of 1871 and the end of 1874.

The part of New Guinea to which Capt. Moresby mainly devoted his attention was the coast of that south-eastern projection, about most of which absolutely nothing certain was known, and the islands lying off it. Commencing at the bay shut in by Yule Island, some careful survey work was done, and two considerable rivers explored as far as obstructions would permit. From this point south-eastward the coast was diligently examined, and its main features will be found plotted in the map which accompanies the volume. The greater part of the length of the coast is fringed with reefs, which are the great obstruction to navigation in that part of the world. At several points along the coast more minute explorations were made of various inlets, and one or two other rivers were opened out leading into the interior. Coming to the south-east coast, Capt. Moresby definitely solved the problem as to its shape. The island ends in a wide fork, from which the north coast sweeps in a series of magnificent bays in a north-west direction, the outline of which, to a distance of between three and four hundred miles, Capt. Moresby has had the honour of laying down for the first time. Around the south-east termination of the island are clustered hundreds of beautiful islands ranging in size from a tiny speck up to the three considerable islands which are named after D'Entrecasteaux, and which until Capt. Moresby's visit were vaguely and inaccurately located; indeed it was not certainly known that they were islands at all. The south-eastern prong of the terminating fork is continued in three islands—Hayter, Basilisk, and Moresby—and all the islands of any size seem to support a large population of tractable and intelligent savages. While part of the south coast surveyed by the *Basilisk* is covered with unhealthy mangrove swamp, a large portion of it is a healthy and beautiful coral beach backed by tree-covered hills. Towards the south-east the coast gets

mountainous, a range of mountains running north-west through the centre of the island, having its culmination in Mt. Owen Stanley, 13,205 feet. The three islands mentioned above, as also the D'Entrecasteaux Islands, contain mountains of considerable altitude, and along a great portion of the north coast densely wooded mountains come right down to the coast. The north coast is marked by an almost entire absence of the reefs which are so characteristic of the south coast. Some minute survey work was done among the islands in the south-east, with the result that a passage has been found which will shorten most materially the voyage from Australia to China. Another important service done by Capt. Moresby to navigation was the accurate survey of the channel in Torres Straits.

Captain Moresby landed on many points of the coast surveyed as well as on the islands, and invariably he and his officers and men became the best of friends with the natives. Captain Moresby's skill in managing savages cannot be surpassed. By tact and patience he in almost every instance managed to obtain a cordial welcome from the natives not only of New Guinea, but of the many islands which he visited to the east of Australia. Not in a single instance was it found necessary to take life, and we would recommend all who have to deal with uncivilised people to study Capt. Moresby's tactics. The natives of the part of New Guinea visited Capt. Moresby speaks of as belonging to the Malay type, lighter coloured than the Papuans, and with the characteristic and elaborately done-up long frizzled hair. They are probably a modification of the genuine Papuan, possibly in the direction of the Malay type, though more probably the modification may be the result of circumstances or of mixture with or gradation into a more distinctly Polynesian type. They are well-made, gentle in demeanour, and stand comparatively high in the scale of uncivilised men, both in intelligence and in art. They are evidently comfortable and happy, living in good houses built on piles, and having abundance at hand to supply all their wants. Many of them seemed not to possess the bow—the spear, club, and hatchet being the chief weapons on the south coast. The officers and crew of the *Basilisk* brought away quite a shipload of weapons, utensils, and ornaments, some of them of really exquisite workmanship. The use of the metals is quite unknown among most of the people visited, who in many cases turned up their noses at the hoop-iron with which the ship was so abundantly supplied, and who with difficulty could be made to see the superiority of the iron hatchet. Capt. Moresby gives many valuable notes on these interesting people, which we commend to the notice of ethnologists. One very curious custom is referred to in the south-east, which, when first seen, roused the indignation of those on board the *Basilisk*, but which Capt. Moresby wisely tolerated. A native, followed by a number of others, rushed on board bearing a dog, which, before anyone could interfere, he caught by the legs and dashed out its brains on the deck. This was horribly shocking, but Capt. Moresby rightly surmised that it was meant as a pledge of friendship. Indeed, the poor natives were evidently utterly bewildered when the officer on duty bundled them out of the ship and threw the poor dog's body after them, and it was only on Capt. Moresby's

going on shore and professing friendship that they were quieted. Another method of friendly salutation is to squeeze the nose and the navel simultaneously with the fore-finger and thumb of each hand; the natives were quite ecstatic when Capt. Moresby and his men, with excellent tact, returned the grotesque salutation. This pleasant people extend all along the south and north coast visited, the black Papuans differing in many respects from the former, and seemingly quite untractable, not having been met with till about 148° E. on the north coast. Though Capt. Moresby does not profess to be either botanist or zoologist, and unfortunately none of his staff seem to have had the necessary qualifications, still naturalists will be able to glean some information from his notes as to the nature of the flora and fauna to be met with on the coast. We have referred to the signs which a recent expedition saw of some large quadruped living on the island; similar traces were found by the *Basilisk* expedition near the head of Collingwood Bay, the second large bay from the south-east, on the north coast of New Guinea. "Here Lieut. Smith observed the droppings of some large grass-eating animal in a spot where the bushes had been heavily trampled and broken. Our opinion was decided that a rhinoceros had haunted there; and we were much surprised, as the animal has never been believed to exist in New Guinea." This and other secrets of this interesting island cannot surely now remain long unrevealed.

We have referred at length to Capt. Moresby's account of his work in New Guinea, but the first half of the book contains a most interesting account of a cruise among the islands to the east and north-east of Australia, upwards of fifty of which were in this way visited. Almost everywhere was the *Basilisk* welcomed, and Capt. Moresby made excellent use of his opportunities in noticing the characteristics of the islands and the people, and in impressing upon the latter the desire of England to befriend them. In several places sad results were seen, and harrowing stories told of the visits of the Polynesian kidnappers, whose inhuman traffic Capt. Moresby set himself to put down. It seems doubtful whether some of the islands called at by the *Basilisk* have been visited by white men before. The natives were mostly fine-looking people, evidently allied to the gentle inhabitants of Southern New Guinea. On many of the islands white traders and missionaries are settled, in others the natives are still in their pristine and contented state. We assure both the physical geographer and the ethnologist that in this part of Capt. Moresby's work, they will find a very great deal to interest them.

The work altogether must be regarded as one of the most valuable recent contributions to geography. Capt. Moresby possesses many of the qualifications which go to make an explorer of the first rank, and he has the gift of telling his story in clear simple language, indulging in no theories, and filling every page with valuable information. In an Appendix he draws attention to the suitability of New Guinea for colonisation, and urges upon the imperial government, we think with justice, the annexation of it and all the neighbouring islands to the south and south-east. While portions of the island are evidently unsuitable for habitation by white men, a very large proportion of the country

would be found perfectly salubrious and productive in the highest degree. We cannot see the force of some of the arguments with which Capt. Moresby supports his plea for annexation. His strong attachment to the natives and his desire for their welfare we think mislead him as to how this is to be accomplished. If New Guinea is to be colonised by white men, all previous experience teaches us that the natives will inevitably suffer, will be demoralised, and ultimately extinguished. It is inexpressibly sad to think of such a fate overtaking these gentle and altogether superior natives of New Guinea; but how can it be helped, unless it is resolved to put a stop to the increase in the white portion of the world's population. We commend the Appendix to the notice of all interested in Australia, which already is beginning to feel itself overcrowded, and must sooner or later overflow, for, as is well known, the interior is a blank. If this country does not speedily annex New Guinea, some other country, with possibly less regard for the interests of the natives, certainly will. We hope at least that Capt. Moresby's work will be the means of giving a new stimulus to the exploration of this abundantly interesting island. Why don't the governments of the various Australian colonies combine to organise an expedition for its thorough exploration, with the countenance and assistance of the imperial government? With a man like Capt. Moresby at the head of such an expedition, how much might be accomplished.

OUR BOOK SHELF

Sketches of British Insects. A Handbook for Beginners in the Study of Entomology. By the Rev. W. Houghton, M.A., F.L.S. (London : Groombridge and Sons, 1875.)

THIS is an attractive little volume, suitable for a child's prize; it contains much useful and carefully selected information, accompanied by some excellent woodcuts, and six gorgeously coloured plates.¹ Although not wholly free from errors, most of them are happily confined to the chapter on Lepidoptera. It may not be amiss to point them out, as they are likely to mislead, and should be corrected in a subsequent edition.

It is doubtful whether the general reader will comprehend the author's statement that "there are no hermaphrodites in the class" of insects; the frequent occurrence of gynandromorphous specimens in collections being a seeming contradiction to this assertion.

The description of the oviposition of *Chrysopa* (pp. 62, 63) is not accurate. The insect, touching the surface of the plant-stem with her abdomen, draws out a thread of viscous matter, and by not at once excluding the egg attached thereto, gives it time to harden; it is *only by not removing her body, or depositing the egg too soon, that the upright hair-like thread is produced.*

In the chapter on Lepidoptera a number of statements are made, which (however seemingly true to the mere tyro in entomology) are perfectly erroneous: thus it is not true that butterflies ever have less than six legs, although the first pair are, in some families, aborted; butterflies cannot be separated from moths by any distinctions but those which serve to divide their families; for a butterfly has not always a pair of *club-shaped* antennæ, the antennæ of some

¹ The plates are rather sticky, and consequently the tissue-paper occasionally adheres to them; this is, however, a matter for congratulation, as it subdues the excess of colour.

moths are distinctly clubbed. Although most butterflies carry the wings upright when in repose, the *Ageroniæ*, many of the *Erycinidæ* and *Hesperiidæ* settle with the wings flat and extended; some of the *Geometridæ* moths on the other hand close them in an upright position over the back. The *Vanessæ* among the butterflies frequently fly by night, and are sometimes taken at sugar;¹ whilst the *Castniidæ*, *Agaristidæ*, *Zygænidæ*, *Ageriidæ*, many *Sphingidæ* and *Lithosiidæ*, some *Bombycidæ* and *Noctuidæ*, the *Uraniidæ*, some *Geometrina*, *Pyralidina*, *Tortricina*, and *Tineina* all fly by day.

The termination *inæ* should be used for sub-families; therefore it is incorrect to say that "the family *Papilionidæ* consists of two sub-families, the *Papilionidæ* and the *Pieridæ*."

The tails of the *Theclinae* are not a sufficient distinguishing character, since these appendages occur also in the British *L. bæticus* and its allies.

The Camberwell-beauty has, of late years, been seen on the wing by most entomologists, and the manner in which the squeaking of *Acherontia atropos* is produced has been fully described in a previous volume of NATURE. The wings of the female Vapourer-moth, although very minute, are clearly distinguishable; this insect therefore cannot be said to be "entirely destitute of wings."

The female stag-beetle bites somewhat sharply, but the male has comparatively little power; it is frequently taken to school by mischievous boys to alarm their fellows, but we never knew of a case in which it caused actual pain.

The Year Book of Facts in Science and the Arts for 1875.
Edited by C. W. Vincent. (London : Ward, Lock, and Tyler, 1876.)

THE present volume is a decided improvement on its predecessor, though it is yet far from being what we hope to see ere long—an annual record of science similar to the excellent American publication edited with so much ability by Mr. Baird. We are glad to observe that this year Mr. Vincent has embraced a wider range in his excerpts, though the newspaper reports of the papers read at the last British Association meeting seem to have been a little too heavily laid under contribution. But then one must remember what a godsend such reports must be to the editor of scientific scraps: two copies of each paper, a pair of scissors, and a gum-bottle, and the thing is done. It would, however, be an injustice to Mr. Vincent to leave our readers under the impression that this book is carelessly edited. Extracts from our own columns, the *Philosophical Magazine*, the *Comptes Rendus*, the *Chemical News*, the *Academy*, and other journals are largely made, and on the whole a wise discrimination and some care have been shown in the selection and arrangement of these scientific jottings. There are, at the same time, some striking omissions which ought hardly to have been passed over. No reference is made to Mr. Crookes's Radiometer and his experiments thereon, beyond a brief report of a discussion on the subject at the British Association. Nor is there any notice of the new system of quadruplex telegraphy, designed by Mr. Winter, nor of the largely increasing use of duplex telegraphy, owing to the valuable modification of that discovery—which really made the system a practical one—devised and carried out some time ago by Mr. W. H. Preece. We commend the editor to the columns of the *Telegraphic Journal* for information on these points. There are also other omissions of recent experimental researches, but as we have already said, this volume is not without its merits, and doubtless many will be glad to make use of the quantity of broken-up information it conveniently conveys. We presume Prof. Osborne, on p. 72, means Prof. Osborne-Reynolds.

¹ *Hesperiidæ* have also been taken at light.